NATIONAL CANCER INSTITUTE

NCI Cancer Bulletin

Eliminating the Suffering and Death Due to Cancer

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http://cancer.gov

President Announces New NCAB Appointees

On June 18, the White House announced the appointment of five individuals to the National Cancer Advisory Board (NCAB) for 6-year terms that will expire March 9, 2010. The appointees are: Dr. John E. Niederhuber (who will also serve as chairman-designate for a 2-year term), Ms. Kathryn Giusti, Dr. Diana M. Lopez, Dr. Carolyn D. Runowicz, and Dr. Daniel Von Hoff.

NCAB, an advisory board mandated as part of the Public Health Service Act, advises the Secretary of the U.S. Department of Health and Human Services (HHS) and the Director of the National Cancer Institute (NCI) about the institute's activities. This includes reviewing and recommending for support grants and cooperative agreements following technical and scientific peer review.

NCAB consists of 18 members appointed by the President and includes leading representatives of the health and scientific disciplines; the general public, including leaders in fields of public policy, law, health policy, economics, and management; and experts in environmental

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Director's Update

The Early Detection Research Network: Advancing Detection and Prediction Science

Five years ago, NCI's Division of Cancer Prevention set out to create a strong, investigator-driven network to conduct translational research to identify tests for early cancer and cancer risk. In early 2000, the Early Detection Research Network (EDRN) became a fully funded group of 28 grantees focused on the overarching goal of creating validated biomarkers ready for large-scale clinical testing. Now, in 2004, EDRN has come to fruition as a broad, interdisciplinary group with the partnerships for advancing science for public benefit. In addition to our many academic and industry partners, the Centers for Disease Control and Prevention, the National Institute of Standards and Technology, and NASA's Jet Propulsion Laboratory are part of the network.

Dr. Peter Greenwald

EDRN is in the forefront of technology-driven research on the early detection of cancer and carcinogenesis. Within the process of carcinogenesis, we find precancerous changes as well as identify people at risk for cancer, all of whom will benefit from preventive interventions. Thus, EDRN research will ultimately aid both detection and prevention, critical keys to eliminating cancer death, by identifying and validating biomarkers, such as proteins or genes, that can be measured to identify disease risk or progression.

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(New Appointees continued from page 1)
carcinogenesis. In addition, leaders of several federal health agencies participate as nonvoting members.

Of the new appointees, Dr. Niederhuber is the only individual who is a current NCAB member. Dr. Niederhuber, who was originally appointed to NCAB in 2002, has been re-appointed to serve as chair for an additional 2 years. He is a professor of surgery and oncology at the University of Wisconsin Medical School.

Ms. Giusti is president of the Multiple Myeloma Research Foundation (MMRF), which she co-founded in 1998 after her own diagnosis of multiple myeloma. MMRF has raised more than $27 million for blood cancer research. In 2003, Ms. Giusti founded the Multiple Myeloma Research Consortium.

Dr. Lopez is a professor in the Department of Microbiology and Immunology at the University of Miami School of Medicine, and is also a program leader in tumor immunology in the Sylvester Comprehensive Cancer Center at the University of Miami School of Medicine. Dr. Lopez was also co-chair of the Trans-HHS Cancer Health Disparities Progress Review Group.

Dr. Runowicz is currently a professor in the Department of Obstetrics and Gynecology and director of the UConn Comprehensive Cancer Center of the University of Connecticut Health Center. Dr. Runowicz is a member of several professional societies and has been the recipient of many honors and awards throughout her medical career.

Dr. Von Hoff is director of the Arizona Health Science Center's Cancer Therapeutics Program, as well as professor in several departments of the University Medical Center in Tucson. Dr. Von Hoff has been a member of many societies, editorial boards, and committees throughout his distinguished career.

"The National Cancer Program will benefit tremendously from the expertise of these individuals," said NCI Director Dr. Andrew C. von Eschenbach. "Through the combination of these appointees' education, experience, and personal knowledge across the spectrum of cancer research, treatment, and survivorship, I am confident that the NCAB will continue to provide NCI with the best guidance to help meet our goal of eliminating the suffering and death due to cancer." ◆

(Director's Update continued from page 1)
The network promotes collaboration among researchers by creating an environment of cross-fertilization and teamwork among different disciplines and laboratories to achieve common goals. Among these goals are to:

- Develop and test promising biomarkers and technologies to obtain preliminary information to guide further testing
- Evaluate promising, analytically proven biomarkers or technologies, including measures of accuracy, sensitivity, specificity, and, when possible, as potential predictors of outcomes or surrogate endpoints for clinical trials
- Analyze biomarkers and their expression patterns to serve as background for large, definitive validation studies
- Collaborate with academic and industrial leaders to develop high-throughput, sensitive assay methods
- Conduct early phases of clinical and epidemiological biomarker studies
- Encourage collaboration and dissemination of information to ensure progress and avoid fragmentation of effort.

Myriad proteins and genes have been linked with a large variety of cancers. Some show sufficient evidence to suggest that they will become useful biomarker tests in medical practice. But there is no substitute for a validated biomarker. EDRN is a leader in the disciplined establishment and use of criteria for the validation of markers, an essential step for progress.

Four critical validation studies are already in progress within EDRN: 1) a trial to determine the sensitivity and specificity of a promising molecular diagnostic technology—called microsatellite analysis 3—in diagnosing bladder cancer; 2) a study to validate a novel approach for early detection of prostate cancer based on protein expression profiling of body fluids in combination with a variety of artificial intelligence algorithms; 3) validation of alpha-fetoprotein and des-gamma carboxyprothrombin for differentiating hepatocellular cancer from nonmalignant liver diseases; and 4) validation of the protein markers annexin I and II, PGP9.5, and autoantibodies to these proteins as biomarkers for early detection of lung cancer.

EDRN is also a leader in the creative use of information technology, including sharing data through the Electronic Catalog Archiving System, and working to take complex information and display, and allow its use by other researchers in intuitive ways. EDRN has pioneered the development of common data elements to speed consistency in data description across institutions and has implemented informatics solutions to enable data sharing between laboratories.

The NCI director has issued a challenge goal: to eliminate the suffering and death from cancer by 2015. One great value of naming such a goal is that it keeps our eye on our mission and keeps our attention on striving for the ultimate public benefit. EDRN's aim is to develop the logistics to help make the strategic goal happen and we are delighted to be working toward that end. ◆

Dr. Peter Greenwald, Director,
NCI Division of Cancer Prevention
Assistant Surgeon General,
U.S. Public Health Service

Special Report

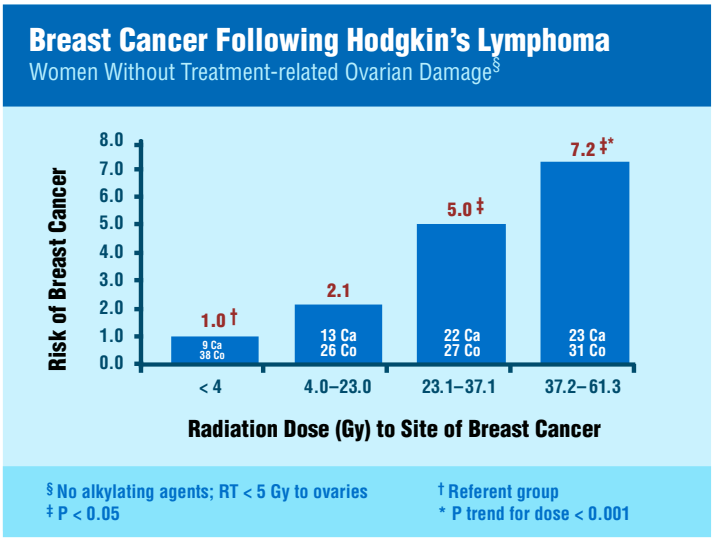
Second Cancers Research Highlights Risks, Opportunities

As recent reports have documented, cancer survivors face significant challenges after finishing active treatment, from psychosocial issues to cardiac effects. One significant concern for survivors of a first primary cancer is the heightened risk of developing a second primary cancer. As treatments continue to improve and the number of people who have survived cancer approaches 10 million, unanswered questions loom about how many people might beat one cancer only to develop a second one.

"Second cancers can be viewed, in part, as a by-product of the success that we have had in treating primary cancers," says Dr. Lois B. Travis, a senior investigator in the NCI Division of Cancer Epidemiology and Genetics (DCEG), who has closely studied the issue.

The overall risk of developing a second cancer is small, Dr. Travis notes, but risk varies widely according to type of primary cancer and treatment modality. Nevertheless, there are some unsettling aspects of second cancers. First, many appear to be at least partly related to the treatment for the first cancer. Second, with several second cancers, the prognosis is often dim. With chemotherapy-induced leukemia, for example, the cure rate is only 10-20 percent. Survivors of a first primary cancer who develop chemotherapy-related acute myeloid leukemia generally have survival times of only a few months after diagnosis.

Both radiation therapy and chemotherapy at both low and high doses have been linked to second malignancies in patients with a variety of first primary cancers, including testicular cancer, ovarian cancer, and pediatric cancers. However, other factors, such as age at time of treatment, lifestyle habits after treatment (especially smoking), and environmental exposures appear to factor into the equation as well.



Source: Travis LB, Hill DA, Dores GM, et al. JAMA 2003; 290: 465-75.

Genetics also can play a role. For example, children who survive a rare cancer called hereditary retinoblastoma have a much greater risk of developing osteosarcomas in the body field where they received radiation treatment, compared to children with nonhereditary retinoblastoma. Second cancers are of particular concern in children and adolescents who have more at-risk years to develop a second cancer than older survivors.

Dr. Travis and colleagues at NCI have conducted a number of studies—often relying on data collected through the NCI Surveillance, Epidemiology, and End Results (SEER) program—to better quantify the risk of second cancers in certain patient populations. In a large, international case-control study published last July in the *Journal of the American Medical Association* (*JAMA*), for example, they were able to correlate specific radiation doses in women under 30 treated for Hodgkin's lymphoma (HL) with an increased risk of developing breast cancer. Dr. Travis presented data from two NCI-led international studies at the recent American Society of Clinical Oncology meeting that linked factors—such as chemotherapy and radiation therapy doses, and smoking frequency—with increased risk of developing breast cancer and lung cancer after successful treatment for HL.

"The ultimate goal of our research is to decrease the 'price of the success' we have had in treating first primary cancers," Dr. Travis says. More clearly understanding the factors that increase the risk for second cancers, she explains, will help guide treatments and improve post-survival screening.

Anecdotally at least, oncologists appear to be paying attention to the research that has been done thus

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Cancer Research Highlights

Tissue-Specific Differences May Relate to Cancer Risk

Though the sequence of the genome may be the same in every cell of the body, the spatial arrangement of chromosomes in the nucleus of a cell differs between cells from different tissues, according to a study by Drs. Luis Parada, Tom Misteli, and Philip McQueen at NCI and the National Institutes of Health (NIH). The findings, published in the June 21 issue of *Genome Biology*, also show a correlation between the likelihood of two chromosomes being positioned close to one another in a specific tissue and their involvement in cancer translocations.

Translocation, a chromosomal aberration often found in various cancers, occurs when a large section of DNA breaks off from one chromosome and fuses to another chromosome.

The scientists used high-resolution microscopy in conjunction with "chromosome painting" to visually map the spatial arrangement of six chromosomes in eight mouse tissue types. Using statistical methods and computer simulations, they verified that chromosomes were positioned differently relative to each other and to the center of the cell's nucleus in each tissue type. This is the first systematic study of the spatial organization of genomes in multiple tissues.

"While we have shown that a subset of mouse chromosomes exhibits differential nuclear positioning among tissues, we suspect that this tissue specificity is likely to occur in humans and that differential spatial organization is a general feature of most chromosomes," said Dr. Parada of NCI's Center for Cancer Research (CCR).

The researchers also saw that certain combinations of chromosomes clustered in different tissues, and they were able to link this to translocation frequency and cancer risk. For example, chromosomes 5 and 6 were often found to be in close proximity in liver cells, but not in lymphocytes; translocations between these two chromosomes are commonly observed in liver tumors, but not in lymphomas. Similar observations were made for other chromosomes in these tissues.

"The probability of two chromosomes undergoing translocation is related to the spatial proximity of these chromosomes," said Dr. Misteli of CCR. "We are now studying the positioning of chromosomes in intact normal and premalignant tissues to test whether three-dimensional spatial genome patterns can be used as diagnostic and predictive tools."

Study Confirms that Early-Stage Ovarian Cancer May be Reliably Symptomatic

Researchers from the University of Washington School of Medicine have shown that women with ovarian cancer have symptoms that are distinct in severity and frequency from those reported by women in the general population. These findings provide physicians with new insight about symptoms that can be used to detect ovarian cancer—the fifth-leading cancer killer of women in the United States—early and accurately. The study was reported by Dr. Barbara A. Goff and colleagues in the June 9 *Journal of the American Medical Association*.

Ovarian cancer is generally considered asymptomatic until its late stage, at which point the 5-year survival rate drops dramatically—from the 70-90 percent seen with early detection, to between 20-30 percent. Previous studies had found a significant link between symptoms and early-stage ovarian cancer, but their reliability was limited. To confirm these earlier findings, Dr. Goff and colleagues surveyed 1,709 women attending primary care visits and compared their responses with those from 128 women who were preparing for surgery to remove an ovarian or pelvic mass.

The study results showed that the symptoms most reliably linked to malignant ovarian cancer were back pain, fatigue, bloating, constipation, abdominal pain, lack of appetite, and urinary urgency. These are common complaints among women, particularly during menses, but those who had malignant masses experienced them 20-30 times per month, with greater severity than the women with benign masses or without cancer. "Symptoms that are more severe, more frequent than expected, and of more recent onset warrant further diagnostic investigation," the researchers recommended.

Infertility Drugs Pose No Risk for Ovarian Cancer

Infertile women can be reassured that taking ovulation-stimulating drugs does not appear to put them at greater risk for developing ovarian cancer later in life. A retrospective cohort study of 12,193 women evaluated for infertility, reported in the June issue of *Obstetrics & Gynecology*, did not find a strong link between use of fertility drugs and an increased risk for ovarian cancer.

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(Research Highlights continued from page 4)
Infertility patients have a significantly higher risk of ovarian cancer compared to the general public. These higher risks are believed to be due to these women giving birth less often, because maternity is a recognized protective factor for ovarian cancer. As the use of infertility drugs has risen, several studies have suggested that ovulation-stimulating drugs may further increase risk. This theory is biologically plausible given that ovarian cancer has been linked in other studies to various factors associated with "incessant ovulation."

The study team at NCI's DCEG evaluated effects of the two drugs used most often to treat infertility—clomiphene citrate and gonadotropins—and the underlying conditions leading to treatment, such as anovulation, that need to be taken into account in evaluating drug effects.

"In comparison with other infertile patients, there was no evidence that use of either clomiphene or gonadotrophins had an adverse effect on ovarian cancer," reported lead investigator Dr. Louise Brinton of DCEG. Her group noted that there were slightly higher, but not statistically-significant, risks for the small group of women followed for 15 years or more, supporting the need for continued monitoring of possible long-term risks from use of infertility drugs.

CEA Vaccine Combined with Celebrex Prevents Colon Tumors in Mice

NCI researchers have shown that the potent nonsteroidal anti-inflammatory drug celecoxib (Celebrex), when used with the relatively new CEA cancer vaccine, is effective in preventing colon tumors in the "MIN" mouse model that mirrors the pathology of the human disease familial adenomatous polyposis (FAP). The study, which represents the first compatibility test of this combined therapy, was led by Dr. John W. Greiner of NCI's Laboratory of Tumor Immunology and Biology, and was published in the May 15 issue of *Cancer Research*.

The CEA vaccine targets a protein that is overexpressed in tumor cells. Researchers bred MIN mice with those that carried the human CEA gene, then fed the offspring food that contained celecoxib and administered the CEA vaccine to them. One control group of vaccinated mice received normal food and a second control group of unvaccinated mice received food with celecoxib.

The results were dramatic. Mice that received the combined celecoxib/CEA vaccine treatment showed 100 percent survival for the 18-month observation period (most of the normal mouse lifespan). In addition to long-term survival, mice that received the combination had 95 percent fewer tumors compared to controls.

Co-author Dr. Jeffrey Schlom explained the clinical significance of the study: "There is a dogma that vaccines can't be used with chemotherapy, and we're finding instances where they can be used with conventional drugs to treat neoplasia." He added that the authors are discussing clinical trials of the celecoxib/CEA vaccine model in humans with FAP pending studies to determine if there is any long-term toxicity due to the vaccine.

Study Provides Insight into Tamoxifen Resistance and How to Reverse It

Results of a new study by Baylor College of Medicine researchers reveals that "cross talk" between the HER2 growth factor receptor and a key estrogen receptor (ER) coactivator may play an important role in resistance to adjuvant tamoxifen in women with ER-positive breast cancer. The study, published in the June 16 *Journal of the National Cancer Institute*, also found that use of gefitinib (Iressa), an epidermal growth factor receptor (EGFR) inhibitor, appears to impede this cross talk and restores tamoxifen's ability to block estrogen from fueling breast cancer cell proliferation.

In the study, Dr. Jiang Shou and colleagues treated a MCF-7 breast cancer cell line that expresses high levels of the ER coactivator AIB1 and a tamoxifen-resistant breast cancer cell line that overexpressed HER2 (MCF-7/HER2-18) with estrogen, tamoxifen, epidermal growth factor, or heregulin in the absence or presence of gefitinib. They discovered that, in order for tumor cells to remain resistant to tamoxifen (at which point the drug actually began to serve as an agonist, fueling tumor cell growth), bidirectional molecular interactions, or cross talk, between the ER and HER2 pathways was necessary. Use of gefitinib interfered with this cross talk, however, and in cell lines and a mouse model, restored tamoxifen's antitumor activity.

In a related editorial, Dr. Daniel Hayes of the University of Michigan Medical Center noted that questions remain about whether these results can be "extrapolated to other cell lines" or "to the vastly heterogenous clinical situation." He added, however, that the findings may aid efforts to determine which patients will benefit most from tamoxifen and which should be given aromatase inhibitors, another class of drugs used in the same clinical setting. ◆

Funding Opportunities

Innovative and Exploratory Research in Digestive Diseases and Nutrition

PA-04-108
Application Receipt Dates:
Oct. 1, 2004; Feb. 1, 2005;
June 1, 2005; Oct. 1, 2005;
Feb. 1, 2006; June 1, 2006;
Oct. 1, 2006; Feb. 1, 2007;
June 1, 2007

This program announcement (PA) invites applications from investigators with research interests in gastroenterology, hepatology, obesity, and nutrition and that serve the missions of the National Institute of Diabetes and Digestive and Kidney Diseases and NCI. The aim of this PA is to stimulate the application of highly novel approaches to important areas of digestive diseases (including associated cancers) and nutrition research. This mechanism is primarily aimed at attracting and supporting new investigators in these research fields.

The PA will use the NIH Exploratory/Developmental Research Grant (R21) award mechanism.

For more information see http://cri.nci.nih.gov/4abst.cfm?initiativeparfa_id=2121

Inquiries: Dr. Sharon Ross, sr75k@nih.gov

Featured Clinical Trial

Combination Chemotherapy for Recurrent Ovarian Cancer

Name of the Trial
Phase III Randomized Study of Carboplatin With or Without Pegylated Doxorubicin HCl Liposome in Patients with Platinum-Sensitive Recurrent Ovarian Epithelial or Primary Peritoneal Cancer (SWOG-S0200). See the protocol summary at http://cancer.gov/clinicaltrials/SWOG-S0200.

Principal Investigator
Dr. David Samuel Alberts of the Arizona Cancer Center and the Southwest Oncology Group.

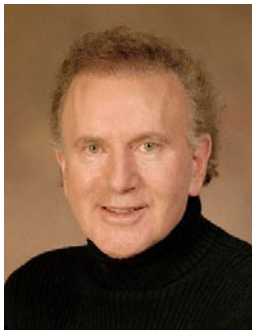
Why Is This Trial Important?
Ovarian epithelial cancer is the leading cause of death from gynecologic malignancies in the United States. Surgery followed by chemotherapy with a platinum-based agent (such as carboplatin) is the standard treatment for advanced stage ovarian epithelial cancer.

Ovarian cancer that remains progression-free for more than 6 months after completion of chemotherapy is called platinum-sensitive. Patients who have a recurrence of platinum-sensitive disease will likely benefit from another round of platinum therapy, which may be given in combination with a non-platinum agent.

Primary peritoneal cancer grows in the peritoneum, a membrane that lines the walls of the abdomen. It is biologically similar to ovarian epithelial cancer.

This trial will study the effectiveness of carboplatin with or without pegylated liposomal doxorubicin in treating patients with recurrent ovarian epithelial or primary peritoneal cancer.

"Whether two-drug combinations are superior to single agent carboplatin in platinum-sensitive disease remains a critical, unanswered question in the management of women experiencing recurrent advanced disease," said Dr. Alberts.



Dr. David Samuel Alberts
Principal Investigator

Who Can Join This Trial?
Researchers seek to enroll 900 patients with stage III or IV ovarian epithelial or primary peritoneal cancer. See the full list of eligibility criteria for this trial at http://cancer.gov/clinicaltrials/SWOG-S0200.

Where Is This Trial Taking Place?
Multiple study sites in the United States are enrolling patients in this trial. See the list of sites at http://cancer.gov/clinicaltrials/SWOG-S0200.

Who to Contact
See the list of study contacts at http://cancer.gov/clinicaltrials/SWOG-S0200 or call the NCI's Cancer Information Service at 1-800-4-CANCER (1-800-422-6237). The call is toll free and completely confidential. ◆

An archive of "Featured Clinical Trial" columns is available at http://cancer.gov/clinicaltrials/ft-all-featured-trials.

Notes

NCI's Roberts Wins Mentoring Award

On June 22, NIH Director Dr. Elias Zerhouni awarded Dr. Anita Roberts, chief of NCI's Laboratory of Cell Regulation and Carcinogenesis, with this year's NIH Mentoring Award. Mentoring Awards are given to NIH staff who exhibit superior mentoring skills, including exhibiting patience and willingness to spend time serving in their role as mentor; teaching high standards for performance, integrity, and ethical conduct; and securing challenging projects and assignments for mentees.

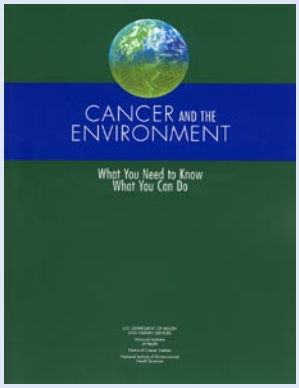
NCI Researchers Honored at AUA Meeting

NCI's Dr. W. Marston Linehan, chief of the Urologic Oncology Branch, CCR, received two honors at the 2004 annual meeting of the American Urological Association (AUA). He won the Society of Urologic Oncology Medal, presented annually to an individual who has contributed significantly to the field of urologic oncology and to the improvement of treatment of patients with urologic malignancy. He was also voted president-elect of the Society of Urologic Oncology.

Also at the AUA meeting, CCR Urologic Oncology Fellow Dr. Michael Franks received the prestigious First Place CapCure Award for work with CCR's Dr. William D. Figg on the development of prostate cancer cell lines from patients with hormone refractory prostate cancer.

Clanton to Oversee OSPA

As part of the shared governance process implemented by NCI Director Dr. Andrew C. von Eschenbach, Dr. Mark Clanton, NCI deputy director for Cancer Care Delivery Systems, has recently taken on the responsibility of overseeing the activities of the Office of Science Planning and Assessment (OSPA). This office assists NCI's leadership and staff to develop and communicate the institute's strategic direction, facilitate the implementation of scientific priorities, and assess progress. OSPA also produces the NCI Annual Plan and Bypass Budget, serves as the home of the NCI Office of Women's Health, and implements the recommendations of Progress Review Groups and other advisory groups. Dr. Clanton's leadership will strengthen the planning and implementation of trans-NCI strategic initiatives. ◆



New Publication Available

Cancer and the Environment, a new booklet from NCI and the National Institute of Environmental Health Sciences, focuses on the agents in the environment that cause cancer. For ordering information, call 1-800-4-CANCER or visit cancer.gov.

(Special Report continued from page 3)

far. After reading the *JAMA* study, Dr. Sophie Fossa, an NCI visiting scientist, continued to follow her HL patients under the age of 40 who had been off treatment for 10 years or more, and encouraged them to come in for a mammography. Seventy-eight women were screened and two cases of breast cancer were detected.

The good news, says Dr. Joachim Yahalom, a radiation oncologist at Memorial Sloan-Kettering Cancer Center, is that treatment protocols have changed—dramatically in some instances—over the time during which the available data on second cancers were collected. Until the mid-1980s, for example, high-dose radiation was often used as a single, systemic treatment for HL. "Radiation is now being used more as an adjunct to less toxic and more effective chemotherapy regimens than we had in the past," he says, "and newer technologies, such as improved imaging devices and new radiation techniques, are allowing oncologists to more precisely target the radiation, exposing less normal tissue to potentially harmful radiation."

In addition, recent studies have shown that equally good results can be achieved in HL patients with lower doses of radiation. "As studies like Dr. Travis' have shown, the risk relates to the dose," Dr. Yahalom says. "And when you drop down to 20 Gy from 40 Gy or even from 30 Gy, you have significantly lower risk."

Based on SEER data from 1973-2000, a monograph describing the risk of second cancers for each major cancer site is expected to be available in 2005. The monograph is a joint effort of NCI's DCEG and Division of Cancer Control and Population Sciences. ◆

Featured Meetings

This is a list of selected scientific meetings sponsored by NCI and other organizations. For locations and times and a more complete list of scientific meetings, including NCI's weekly seminars and presentations open to the public, see the NCI Calendar of Scientific Meetings at http://calendar.cancer.gov.

NCI Advisory Committee Upcoming Meetings

Date	Advisory Committee
June 24-25	NCI Board of Scientific Advisors
July 12-13	Clinical Sciences and Epidemiology - Subcommittee 1, Board of Scientific Counselors, NCI
July 12	Basic Sciences - Subcommittee 2, Board of Scientific Counselors, NCI

Selected Upcoming Meetings of Interest

Date	Meeting	NCI Speakers
June 27-July 1	Canadian Urologic Association 59th Annual Meeting	Dr. Andrew C. von Eschenbach, Director
July 8-10	ICT X Satellite Meeting on Molecular Epidemiology—Linking Toxicology to Epidemiology: Biomarkers and New Technologies	Dr. J. Carl Barrett, Director, Center for Cancer Research; Dr. Richard Hayes, Occupational Epidemiology Branch, Epidemiology and Biostatistics Program, Division of Cancer Epidemiology and Genetics
July 10	ASCO Update 2004	Dr. James H. Doroshow, Director, Division of Cancer Treatment and Diagnosis
July 10-13	12th SPORE Investigators' Workshop	Dr. Andrew C. von Eschenbach, Director; Dr. Karen H. Antman, Deputy Director, Translational and Clinical Sciences; Dr. Anna Barker, Deputy Director, Advanced Technologies and Strategic Partnerships; Dr. James H. Doroshow, Director, Division of Cancer Treatment and Diagnosis

NCI Exhibits

NCI Exhibits are presented at various professional and society meetings. Further information about the NCI Exhibits program can be found at http://exhibits.cancer.gov.

This *NCI Cancer Bulletin* is produced by the National Cancer Institute (NCI). NCI, which was established in 1937, leads a national effort to eliminate the suffering and death due to cancer. Through basic and clinical biomedical research and training, NCI conducts and supports research that will lead to a future in which we can prevent cancer before it starts, identify cancers that do develop at the earliest stage, eliminate cancers through innovative treatment interventions, and biologically control those cancers that we cannot eliminate so they become manageable, chronic diseases.

For more information on cancer, call 1-800-4-CANCER or visit http://cancer.gov.

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